

## ABSTRACT

To provide a cell-filled device that is suitable for use in, for example, an implantable or circulation type hybrid artificial organ. In a cell-filled device including hollow fiber membranes whose hollow portions are filled with cells, the hollow fiber membranes have modified cross sections, and a cell aggregate provided in each of the hollow portions has cells formed into two or more layers in arbitrary directions, provided that the distance from an arbitrary point of the cell aggregate to the nearest inner wall of hollow fiber membrane is less than 75  $\mu\text{m}$ . This cell-filled device enables effective use of cells without the necrosis thereof. Further, according to the present invention, there is provided a method of manufacturing the cell-filled device.